

CLAIM AMENDMENTS

Please amend claims 1, 7, 15, and 20 as follows.

1. (Currently Amended) A method for provisioning bandwidth in a hybrid network, comprising:

assigning a set of switching wavelengths to traffic in the network, the switching wavelengths being labels to indicate that the traffic is to be switched in optical domain using optical circuit switching;

optically switching traffic that is able to be switched using switching wavelengths between nodes using the set of switching wavelengths;

assigning a set of routing wavelengths to traffic that cannot be switched using switching wavelengths, the routing wavelengths being labels to indicate that traffic is to be routed, undergo conversion from optical domain to electrical domain, and undergo conversion from electrical domain back to optical domain; and

routing the traffic that cannot be switched using the routing wavelengths.

2. (Original) The method of claim 1, further comprising:

identifying critical nodes in the network;

establishing at least one static path between the identified critical nodes; and

optically switching traffic on the static path using the set of switching wavelengths.

3. (Original) The method of claim 1, further comprising:

dynamically selecting a path for traffic flow;

signaling downstream nodes in the path to establish and maintain the selected path for a predetermined time period;

optically switching traffic on the selected path during the predetermined time period using the set of switching wavelengths; and

releasing the selected path after the predetermined time period elapses.

4. (Canceled).

42P10984
Serial No. 09/881,448

2

Examiner: David S. Kim
Art Unit: 2633

5. (Original) The method of claim 1, further comprising:
statically assigning a set of switching wavelengths to traffic in the network;
and
optically switching the traffic between nodes using the set of switching wavelengths.
6. (Original) The method of claim 1, further comprising:
dynamically assigning a set of switching wavelengths to traffic in the network; and
optically switching the traffic between nodes using the set of switching wavelengths.
7. (Currently Amended) A method for sharing bandwidth in a hybrid network, comprising:
labeling traffic to be switched in the network with a set of switching wavelengths, the switching wavelengths to indicate that the traffic is to be switched in optical domain using optical circuit switching;
labeling traffic to be routed in the network with a set of routing wavelengths, the routing wavelengths being labels to indicate that traffic is to be routed, undergo conversion from optical domain to electrical domain, and undergo conversion from electrical domain back to optical domain;
optically switching the traffic labeled with switching wavelengths; and
routing the traffic labeled with routing wavelengths if the traffic labeled with switching wavelengths cannot be optically switched.
8. (Original) The method of claim 7, further comprising:
optically switching the traffic labeled with switching wavelengths using optical circuit switching; and
routing the traffic labeled with routing wavelengths using Internet Protocol (IP) routing.

9. (Original) The method of claim 8, further comprising:

converting the traffic labeled with routing wavelengths from an optical domain to an electrical domain;

processing the traffic labeled with routing wavelengths in the electrical domain; and

converting the traffic labeled with routing wavelengths back to the optical domain from the electrical domain.

10. (Original) The method of claim 7, further comprising:

optically switching the traffic labeled with switching wavelengths using a wavelength network element, an optical cross-connect, an optical network element, an optical switch, a lambda switch, a lambda network element, or a wavelength translator.

11. (Original) The method of claim 7, further comprising:

routing the traffic labeled with routing wavelengths using Open Shortest Path First (OSPF), Resource Reservation Protocol (RSVP), or Border Gateway Protocol (BGP).

12. (Original) The method of claim 7, further comprising:

routing the traffic labeled with routing wavelengths using an Internet Protocol (IP), asynchronous transport mode (ATM), or frame relay.

13. (Original) The method of claim 7, further comprising:

labeling traffic to signal and transfer control information updates in the network with a set of control wavelengths; and

exchanging routing updates using the set of control wavelengths.

14. (Original) The method of claim 7, further comprising:

labeling traffic to signal and transfer control information updates in the network with a set of control wavelengths;

appending labeling information on routing updates;

42P10984

Serial No. 09/881,448

4

Examiner: David S. Kim

Art Unit: 2633

exchanging routing updates and labeling information using the set of control wavelengths; and

generating a label map from the routing updates and labeling information.

15. (Currently Amended) An apparatus to communicate in a hybrid network, comprising:
switching logic to optically switch traffic carried on a set of switching wavelengths, the switching wavelengths being labels to indicate that the traffic is to be switched in optical domain using optical circuit switching;

routing logic coupled to the switching logic to route traffic carried on a set of routing wavelengths, the routing wavelengths being labels to indicate that traffic is to be routed, undergo conversion from optical domain to electrical domain, and undergo conversion from electrical domain back to optical domain; and

control logic coupled between the switching logic and the routing logic for receiving information carried on a set of control wavelengths to determine whether all traffic is to be directed to the switching logic or a portion of the traffic that cannot be directed to the switching logic is to be directed to the routing logic.

16. (Original) The apparatus of claim 15 wherein the switching logic is further to:

dynamically select a path for traffic flow;

signal downstream nodes in the path to establish and maintain the selected path for a predetermined time period;

optically switch traffic on the selected path during the predetermined time period using the set of switching wavelengths; and

release the selected path after the predetermined time period elapses.

17. (Original) The apparatus of claim 15 wherein the switching logic is further to:

assign a set of routing wavelengths to a portion of the traffic in the network;

and

route the portion of traffic between nodes using the set of routing wavelengths.

18. (Original) The apparatus of claim 15 wherein the switching logic is further to:
statically assign a set of switching wavelengths to traffic in the network; and
optically switch the traffic between nodes using the set of switching wavelengths.
19. (Original) The apparatus of claim 15 wherein the switching logic is further to:
dynamically assign a set of switching wavelengths to traffic in the network;
and
optically switch the traffic between nodes using the set of switching wavelengths.
20. (Currently Amended) A hybrid communication system network, comprising:
a first hybrid node to label switched traffic with a set of switching wavelengths, the switching wavelengths being labels to indicate that the traffic is to be switched in optical domain using optical circuit switching, to attempt to send the switched traffic to at least one secondary hybrid node via the set of switching wavelengths, to label traffic that cannot be sent to the at least one secondary hybrid node using the set of switching wavelengths with a set of routing wavelengths, the routing wavelengths being labels to indicate that traffic is to be routed, undergo conversion from optical domain to electrical domain, and undergo conversion from electrical domain back to optical domain, to send the traffic that cannot be sent to the at least one secondary hybrid node using the set of switching wavelengths to the at least one secondary hybrid node via the set of routing wavelengths; and

at least one secondary hybrid node coupled to the first hybrid node to receive the switched traffic on the set of switching wavelengths and routed traffic on the set of routing wavelengths, to route the routed traffic using an Internet Protocol (IP), asynchronous transport mode (ATM), or frame relay, and to optically circuit switch the switched traffic and the routed traffic to another secondary node.
21. (Original) The system of claim 20 wherein the first and secondary hybrid nodes further comprise a wavelength network element, an optical cross-connect, an optical network

element, an optical switch, a lambda switch, a lambda network element, or a wavelength translator.

d 22. (Original) The system of claim 20 wherein the first and secondary hybrid nodes each further comprises logic to receive routing updates and label information via a set of control wavelengths, to generate a label map from the routing updates and labeling information, to generate a switching matrix using the label map.

23. (Original) The system of claim 20 wherein the first and secondary hybrid nodes each further comprises logic to store routing.
